

**REMARKS**

Claims 1-32 are pending in the current application. Claims 1, 19 and 32 are independent claims.

**35 U.S.C. § 112, Second Paragraph**

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly to point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner alleges that the term “fuel bundle pedigree” is indefinite. The Examiner alleges that the language “might be” as recited on page 22 of the Specification is inadequate. Applicant respectfully disagrees. The portion of the Specification that the Examiner refers to recites:

[0054] The fuel bundle pedigree is determined from a number of factors the foremost being an inspection of the fuel, either visually or by some other non-destructive test procedure, which is designed to detect a current failed fuel bundle or the vulnerability of the bundle to future failure. Failure mechanisms include such items as corrosion, debris impact, and mechanical bowing of the fuel bundle. Another factor affecting pedigree is possible reconstitution of a fuel bundle, which is a repair process involving the replacement of damaged fuel rods with replacement rods that may be a uranium containing fuel rod or alternatively, a non-uranium containing rod (e.g. stainless steel), henceforth referred to as a ‘phantom’ rod. A pedigree attribute might be ‘RU’ and ‘RP’ for reconstituted with uranium and phantom rods, respectively, and ‘DC’, ‘DD’ and ‘DB’ for damaged by corrosion, debris, and bow, respectively. A ‘blank’ pedigree attribute would designate a bundle that was undamaged and useable. (pages 21-22 of the Specification)(Emphasis Added)

In context, it is clear that the Applicant uses the language “might be” to list specific examples. The Applicant gives numerous examples of potential fuel bundle pedigree designations. For example, the phrase “[a] pedigree attribute might be ‘RU’ and ‘RP’ for reconstituted with uranium and phantom rods, respectively” means that if a fuel bundle is

reconstituted with uranium rods the pedigree attribute is 'RU' and if a fuel bundle is reconstituted with phantom rods the pedigree attribute is 'RP' (pages 21-22 of the Specification). Applicant respectfully submits that the term "fuel bundle pedigree" is sufficiently clear.

Applicant respectfully requests that the Examiner withdraw this rejection.

### **35 U.S.C. § 102 (b) Glasstone**

Claims 19 and 32 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by Glasstone. Applicant respectfully traverses this art ground of rejection.

Glasstone is an excerpt from a nuclear reactor engineering textbook published in 1981. Glasstone states that "[v]arious methods have been considered for fuel loading, unloading, and distribution schedules in order to achieve high fuel burn up for a given initial enrichment" (pages 530-531 of Glasstone) (Emphasis added). Each of the loading scenarios disclosed by Glasstone is directed exclusively to initial loading scenarios. For example, in Outside-to-Center loading, "the fresh fuel is charged near the outer edge and moved progressively towards the center from which it is discharged" (page 531 of Glasstone) (Emphasis added). Center-to-Outside is the reverse of this scenario (page 531 of Glasstone). With respect to bidirectional loading, Glasstone teaches that "[c]harging and discharging of the fuel is achieved by pushing relatively short fuel slugs (or bundles) through the core from one side of the reactor to the other, but from opposite directions and adjacent channels" (page 531 of Glasstone). In Scatter Loading, Glasstone states that "[A]t each subsequent loading, the assemblies with the lowest remaining fissile content are removed and replaced by fresh fuel of the highest enrichment" (page 532 of Glasstone) (Emphasis added). In Modified Scattered Loading, Glasstone states that "[i]n the initial loading, fuel assemblies of three

different enrichments are used, as shown in Figure 8.14. At the end of each operating cycle, the most highly depleted fuel is removed from the inner region and is replaced by fuel assemblies from the outer region. The latter are then replaced by fresh fuel of the highest enrichment” (page 532 of the Glasstone) (Emphasis added).

In each of the above scenarios, fuel bundles are only replaced by or swapped with other fuel bundles which are currently within the core (e.g., with higher enrichments than the replaced bundle) or fresh bundles. None of the above scenarios disclose populating the loading map with fuel bundles from a fuel pool. The fuel pool typically contains fuel bundles which have already been removed from the core, not fresh bundles. The Examiner states repeatedly that “fuel bundles are radioactive, and thus are stored under water in fuel pools” (pages 4 and 5 of the Office Action). However, fuel bundles are typically not radioactive before they are inserted into a nuclear core for a first time. Thus, fresh fuel bundles are not necessarily stored in fuel pools.

In view of the above, Applicant respectfully submits that Glasstone cannot disclose or suggest “populating a loading map with fuel bundles stored in at least one fuel pool” as recited in independent claim 19 and “using nuclear fuel bundles residing in at least one fuel pool in a new loading map” as recited in independent claim 32.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

**35 U.S.C. § 103 (a) Glasstone in view of Russell '437**

Claim 1 stands rejected under 35 U.S.C. § 103 (a) as being unpatentable over Glasstone in view of Russell '437. Applicant respectfully traverses this art grounds of rejection.

As discussed above with respect to independent claims 19 and 32, Applicant has shown how Glasstone discloses nothing with respect to populating “a loading map with fuel bundles residing in at least one fuel pool” as recited in independent claim 1. The Examiner now seeks to incorporate Russell '437 in order to overcome Glasstone's failure to disclose a “graphical user interface” as disclosed independent claim 1.

It is clear from a cursory review of Russell '437, that Russell '437 does not disclose or suggest populating “a loading map with fuel bundles residing in at least one fuel pool” as recited in independent claim 1. Thus, in view of the deficiencies of Glasstone as discussed above, it follows that the combination of Glasstone and Russell '437 cannot disclose or suggest populating “a loading map with fuel bundles residing in at least one fuel pool” as recited in independent claim 1.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

**35 U.S.C. § 103 (a) Glasstone in view of Russell '437, Russell '348 and MPEP 2144.04**

Claims 2-18 and 20-31 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Glasstone in view of Russell '437, Russell '348 and MPEP 2144.04. Applicant respectfully traverses this art ground of rejection.

As discussed above, the combination of Glasstone in view of Russell '437 cannot disclose or suggest populating “a loading map with fuel bundles residing in at least one fuel

pool” as recited in independent claims 1 and 19. Further, a cursory review of Russell ‘348 shows that Russell ‘348 is similarly does not disclose or suggest populating “a loading map with fuel bundles residing in at least one fuel pool” as recited in independent claims 1 and 19.

Further, the Examiner incorporates MPEP § 2144.04(xi)(b) merely to recognize that “[i]t is well settled that the mere duplication of parts has not patentable significance unless a new and unexpected result is produced” (Pages 7-8 of the Office Action). However, given that independent claims 1 and 19 are allowable over the references of Glasstone in view of Russell ‘437 and further in view of Russell ‘348 at least for the reasons discussed above, Applicant respectfully submits that the Examiner use of MPEP § 2144.04(xi)(b) is improper.

As such, claims 2-18 and 20-31, dependent upon independent claims 1 and 19, respectively, are likewise allowable over the combination of Glasstone in view of Russell ‘437, Russell ‘348 and MPEP § 2144.04 at least for the reasons given above with respect to independent claims 1 and 19.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

Reconsideration and allowance of all pending claims is respectfully requested.

**CONCLUSION**

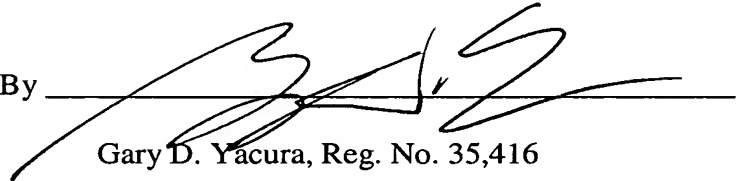
Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-32 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,  
HARNES, DICKEY, & PIERCE, P.L.C.

By

A handwritten signature in black ink, appearing to read 'G. Yacura', is written over a horizontal line.

Gary D. Yacura, Reg. No. 35,416

P.O. Box 8910  
Reston, Virginia 20195  
(703) 668-8000

GDY/DAP/cdw